

VSA MYP Mathematics Year 10 Topic Planner



(Extended Maths Objectives **highlighted**)

Time for this unit: 10 to 11 weeks (5 lessons per week. 50 mins/lesson)

Weeks	Topic	General Aims By the end of this unit students should be able to:	Specific VSA Learning Objectives By the end of this unit students should know/be able to:	Main Resource(s)
17 to 28	Growing Things (Exponentials & Logarithms; Arithmetic & Geometric Sequences and Series; Line of Best Fit)	<ul style="list-style-type: none"> ➤ Understand the nature of exponential growth ➤ Understand that the log function is the inverse of an exponential ➤ Recognise sequences and connect them to their generator. ➤ Appreciate real-life contexts for phenomena best-described by exponential or logarithmic functions ➤ Appreciate the basic descriptive ideas of arithmetic and geometric progressions ➤ Understand the ability of APs and GPs to model growth seen in everyday life. ➤ Appreciate that technology can plot the line (or curve) of best fit ➤ Appreciate the importance of correlation coefficient ➤ Appreciate that correlation is not the same as “cause + effect” 	<ul style="list-style-type: none"> ➤ Comfortably use rules of indices (covered in Y9) ➤ Understand the properties of the function $y = a^x$ ➤ Solve problems such as $a^x = b$ graphically and with the use of technology ➤ Graph the function $y = a^x$ ➤ Recognise real-world examples of exponential growth (population, money etc.) ➤ Understand the equivalence of $a^b = c$ and $\log_a c = b$ ➤ Use and apply the rules of logs ➤ Use logs to solve $y = a^x$ ➤ Convert from an exponential to a linear graph ➤ Know and appreciate basic facts about the number e ➤ Work with natural logarithms ➤ Solve equations of the type $e^{bx} = a^x$ ➤ Know, understand and use key vocabulary (<i>term, progression, sequence, series, sum, generator, difference, ratio, common</i>) related to sequences and series ➤ Find the n^{th} term of an AP via $T(n) = a + (n - 1)d$ ➤ Find the sum to n terms of an AP via: $S(n) = n/2[2a + (n - 1)d]$ and/or $S(n) = n/2[F + L]$ ➤ Recognise and manipulate real-life examples of AP growth – eg Simple Interest ➤ Find the n^{th} term of a GP via $T(n) = ar^{n-1}$ ➤ Find the sum to n terms of an GP via: $S(n) = \frac{a(r^n - 1)}{r - 1}$ ➤ Appreciate the importance of the value of r in determining if a GP can have a sum to infinity ➤ Use $S_{\infty} = \frac{a}{r - 1}$ for $-1 < r < 1$ ➤ Recognise and manipulate real-life examples of GP growth – eg Compound Interest 	New Trend Mathematics 4B (Ch10, Ch11); 5A (Ch14); MEP GCSE Booklets New Trend Mathematics (Teachers CD + DVD)
				Supported Resources

		<ul style="list-style-type: none">➤ Plot scatter graphs of bivariate data➤ Describe scatter graphs as showing no/weak/strong/perfect correlation (negative or positive)➤ Appreciate that the line of best fit (if of the form $Y = mX + c$) will pass through the point (\bar{X}, \bar{Y})➤ Appreciate that a correlation coefficient r acts as a numerical indicator of the strength of a relationship➤ Appreciate the significance of r^2➤ Draw (by eye) the line of best fit➤ Have some appreciation of how a software programme plots the line of best fit (method of least squares)➤ Find the equation of line of best fit of a set of data using a GDC	Various worksheets Mathletics Financial Reports www.interactivemaths.net/
Guiding Question	Main Areas of Interaction Focus	Learner Profile	
How do things grow (or decay?)	Environments – How can we use our knowledge of the “mathematics of growth” to explain various threats to the environment – the so-called “human footprint”?	Communicators – using mathematical language and symbols to explain limited resources Knowledgeable – Understanding important local issues	
	Technology	Assessment(s)	
	<ul style="list-style-type: none">➤ Use of spreadsheets to generate terms of a sequence➤ Using the LIST function of a GDC➤ Curve-fitting on GDC➤ Curve-fitting with Geogebra➤ Internet research	Penicillin (Criteria B, C) Human Footprint – The Tsang Kwan-O Landfill (Criteria B, C, D)	
	Embedded Enquiry	Cross-curricular Links	
	Researching local government figures on waste production	Modelling the growth of the “value” of a company (Humanities)	
ATL	Problem Solving & Thinking Skills: Independently construct a number of plans to tackle a problem, and identify the most suitable plan. Reflection Skills: Explain the reasonableness of the answers obtained and find the most reasonable result.		